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FIVE NEW THRIPS FROM THE SOUTHWEST (THYSANOPTERA: TUBULIFERA)

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Several of the new species described herein were collected by colleagues of Dr. Federico Bonet of Mexico City, who, in turn sent them on to me. The remaining species were taken by Dr. C. C. Hoff of Albuquerque and Dr. G. F. Knowlton of Logan, Utah. To these zoologists I express my appreciation for making the following thrips available for study. I am indebted also to Miss Kellie O'Neill for the loan of specimens and for helpful information on *Haplothrips* and its relatives.

The types of each species are deposited in the Illinois Natural History Survey.

Adraneothrips Hood

In erecting this genus, Hood originally related it to *Haplothrips*. If, as Hood contends, *Adraneothrips* is allied to *Haplothrips*, the relationship must be a distant one. As the name implies, *Adraneothrips* is a genus of degenerate or "feeble" thrips. Unlike *Haplothrips*, the praepectal plates are lost, portions of the thoracic sternal sclerites are fractured into tiny platelets, and the wings are more fragile. Like a possibly closer ally, *Cephalothrips*, which also lacks praepectal plates, the eyes of species of *Adraneothrips* are frequently prolonged posteriorly on the ventral surface of the head and the intermediate antennal segments are usually bicolored. Unlike *Cephalothrips*, species of *Adraneothrips*, with the exception of *microsetis* and *bellus*, have all of the major prothoracic setae well developed. Actually the genus *Adraneothrips* is difficult to characterize and its species are sometimes even difficult to recognize as members. Much taxonomic work still remains to be done on this group.

There follow descriptions of four new species from an area, the Upper Sonoran Life Zone, where few *Adraneothrips* have been known. Three of these species are unusual in that they are either apterous or brachypterous. Except for *stenocephalus* Hood and *microsetis* Hood every other previously described species has been fully winged.

Adraneothrips faustus new species

Male (brachypterous).—Length, distended exclusive of the antennae and setae, about 1.5 mm. Color uniformly dark brown except apical half of each tibia and all of each tarsus and the extreme base of anten-

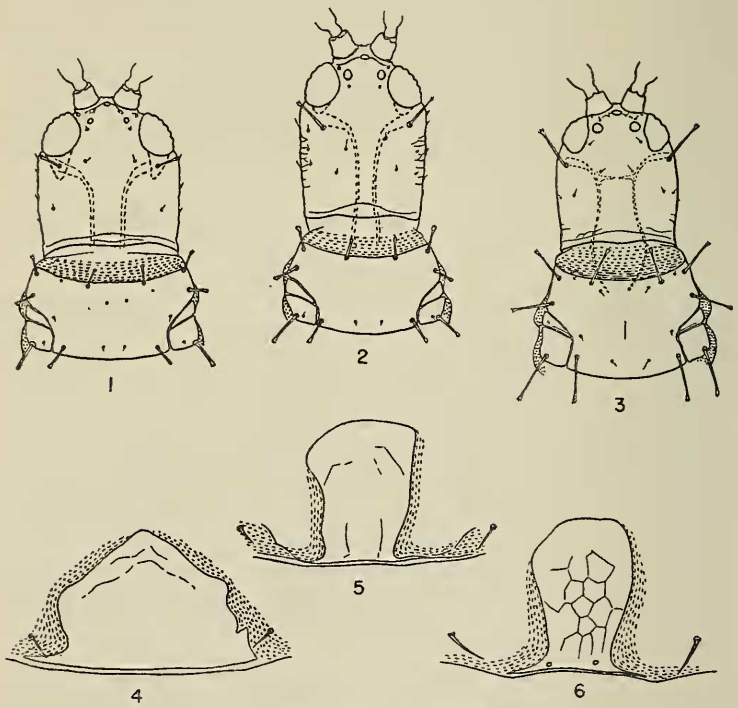
nal segment III which are yellow. Base of antennal segment IV light brown.

Head elongate, fig. 2; eyes ventrally prolonged slightly posteriorily beyond the posterior dorsal margins; antennal segment III seemingly with only one outer sense cone.

Prothorax with all major setae well developed and dilated at tips. Both fore and hind wing pads present, reaching nearly to the posterior margin of the metathorax, beginning to approach the micropterous condition.

Pelta, fig. 5, without pores, longer than wide; abdominal sternum VIII without glandular area.

Holotype.—Male; Imperial Bay, California; February 1, 1949; (C. Tellez); presumably from ground litter and separated by means of a Berlese funnel.



Explanation of Figures

Dorsal aspect of head and prothorax: fig. 1. *Adraneothrips vacuus;* fig. 2. *Adraneothrips faustus;* fig. 3. *Haplothrips (Xylaplothrips) sonorensis.*

Pelta (differentiated shield on abdominal tergum I): fig. 4 *Adraneothrips hoffi;* fig. 5. *Adraneothrips faustus;* fig. 6. *Adraneothrips ephippium.*

The only other species belonging to *Adraneothrips* which is also brachypterous is *stenocephalus*. Since *stenocephalus* is known solely from the female sex and *faustus* is here described from a single male specimen, these two species cannot be compared fully. However, the color and certain features of each are so distinctive that there is no possibility of confusing them. In color *faustus* is nearly uniformly brown whereas *stenocephalus* has much yellow on the basal abdominal segments. Pelta pores are present in individuals of *stenocephalus;* by contrast *faustus* lacks such pores. Furthermore the head of *stenocephalus* is proportionately longer than in *faustus* (compare fig. 2 with Hood, 1950, fig. 91).

Adraneothrips vacuus new species

Female (apterous).—Length, distended, exclusive of the antennae and setae, slightly more than 1.2 mm. Bicolored brown and yellow. Brown: head; prothorax (light brown); mid-portion of abdominal tergum VII (light brown); sometimes lightly on sides of abdominal segments III and IV; abdominal segments VIII, IX, X; antennal segments I and II, apex of segment III, apical half of IV, V, and VI, and all of VII and VIII. Rest of body yellow with much red subintegumental pigments around the margins.

Head, fig. 1, moderately short; eyes considerably prolonged posteriorly on the ventral surface of the head; ocelli present but reduced in size; antennal segment III with one outer sense cone.

Prothorax with all major setae present, subequal in length, and each one dilated at tip; wings seemingly entirely absent, not even pads present.

Abdomen with pelta wider than long as in fig. 4, without pores; wing holding setae reduced, straight and spinelike, not sigmoidal.

Male (apterous).—Length, distended, exclusive of the antennae and setae, about 1 mm. Color and structure generally similar to female; abdominal sternum VIII with a small, nearly circular to elongate oval, median glandular area; lateral pair of setae on posterior abdominal tergum VIII reduced and spinelike.

Holotype.—Female; Hollywood, California; January 16, 1949; (C. Tellez). *Allotype.*—Male; same data as for holotype; 2 ♀, 2 ♂; Santa Cruz Island, California; January 27, 1949; (F. Taylor). All are presumed to be from ground litter from which they were separated by means of a Berlese funnel.

Apterism in the genus *Adraneothrips* is unusual. Besides this species and the closely related *hoffi*, the only other species that is also apterous is *microsetis* from Peru. The species *microsetis* is mostly dark brown and is in sharp contrast to the bicolored yellow and brown *vacuus* and *hoffi* and therefore can be easily distinguished on color as well as other differences. The species *hoffi* can be differentiated from *vacuus* by the features mentioned in the discussion following the description of *hoffi*. Actually, the color of abdominal tergum VIII is sufficient to distinguish *vacuus* from *hoffi* at a glance. In *vacuus* this tergal plate is brown whereas in *hoffi* it is bright yellow.

Adraneothrips hoffi new species

Female (apterous).—Length, distended exclusive of the antennae and setae, about 1.4 mm. Bicolored brown and yellow. Brown: sides of and

apex of head, antennal segments I and II, apexes of III, IV, V, and VI, and all of segments VII and VIII; and abdominal segments IX and X. Rest of body yellow with much red subintegumental pigments around the margins.

Head similar to fig. 1; eyes considerably prolonged posteriorly on the ventral surface of the head; ocelli absent; antennal segment III with two outer sense cones.

Prothorax with all major setae present, subequal in length, and each one dilated at tip; wings seemingly entirely absent, not even pads present.

Abdomen with pelta wider than long, fig. 4, without pores; wing holding setae reduced, straight and spinelike, not sigmoidal.

Male (apterous).—Length, distended, exclusive of the antennae and setae, slightly more than 1 mm. Similar to the female in color and general structure; glandular area on abdominal sternite VIII slightly more oval (wider) than the area found in males of *vacuus*.

Holotype.—Female; Cole Springs, Sandia Mountains, Bernalillo Co., New Mexico; July 21, 1951: (C. C. Hoff); ex: Acorn hulls in squirrel's cache. *Allotype*.—Male; same data as for holotype. *Paratype*.—11 ♀; same data as for holotype; 5 ♀, 7 ♂; Chamisos Canyon in the Manzano Mountains (10 miles east of Albuquerque), Bernalillo Co., New Mexico; April 2, 1950; (C. C. Hoff); ground litter from almost pure stand of scrub oak.

The light color of *hoffi* is not due to possible teneral conditions but rather is the ultimate color. In the type series there are several females each bearing a fully developed egg within the abdomen and the aforegoing color description was made from these mature individuals.

The New Mexican *hoffi* is most closely related to its southern Californian neighbor *vacuus*. Besides being slightly longer in size, *hoffi* is lighter in color than *vacuus*, and, unlike *vacuus*, antennal segment III bears two outer sense cones. Because of the total lack of ocelli *hoffi* is considered to be more specialized (by degeneracy) than *vacuus*.

Lack of ocelli is unusual in this genus. The Peruvian *microsetis* is the only other species in *Adraneothrips* which is chacterized by the lack of ocelli. In addition to color characteristics, *hoffi* can be distinguished from *microsetis* by the form of the anterior prothoracic setae. In *hoffi* (as well as in the near related *vacuus*) these setae are well developed and dilated at the tips; in *microsetis* the anteromarginals are vestigial and the anterolaterals are pointed at the tips.

Adraneothrips ephippium new species

Female (macropterous).—Length, distended, exclusive of the antennae and setae, about 1.5 mm. Color predominantly brown, interrupted by yellow. Yellow: base of antennal segments III, IV, V, and VI; fore and hind tibiae, apex of mid tibiae; all tarsi; and abdominal segments II, VI, and VII. Rest of body brown; abdominal segments III, IV, and V lighter brown; much of body with red subintegumental pigments. Fore wings with a pale brown, subbasal band.

Head similar in shape to *vacuus*, fig. 1; ocelli well developed; eyes ventrally prolonged more than the dorsal posterior margin; antennal segment III with but one outer sense cone.

Prothorax with all major setae present, subequal in length, and each one dilated at tip; fore wings, each with three accessory fringe cilia.

Abdominal segment I with pelta as in fig. 6, longer than wide and with pores; tube much more than one half as long as head.

Holotype.—Female; La Jolla, California; December 15, 1948; (C. Tellez); presumably from ground litter and recovered by means of a Berlese funnel.

This western species resembles the southeastern *decorus* Hood in many ways except in color and in the structure of the eyes. In color *decorus* is lighter with more yellow in the body than in *ephippium.* In *decorus* the eyes are hardly at all prolonged on the ventral surface whereas in *ephippium* the eyes are decidedly prolonged ventrally.

Haplothrips subgenus **Xylaplothrips** Priesner

The rank of *Xylaplothrips,* either as a subgenus or genus or merely a species complex, is a point of controversy among thysanopterists. At the moment, I shall consider it a subgenus of *Haplothrips* differing little from *Haplothrips* s. str. and differing little from *Karnyothrips* which is also more properly a subgenus of *Haplothrips.*

As Priesner pointed out in 1939, the placement of the fore tarsal tooth is diagnostic. In individuals assignable to *Xylaplothrips* the fore tarsal tooth is located at the extreme apex of each segment, not subapically as in most species of *Haplothrips* s. str. Besides this characteristic, *Xylaplothrips* can be differentiated from most species of the typical subgenus by the delicate, slender body form. Specimens of the typical subgenus are robust by comparison.

From *Karnyothrips, Xylaplothrips* can be distinguished usually by the length of certain prothoracic setae. In *Karnyothrips* the anteromarginal setae are minute and never as well developed as the anterolateral setae. In *Xylaplothrips* the anteromarginals are well developed and subequal in length to the anterolaterals.

Haplothrips (Xylaplothrips) sonorensis new species

Female (brachypterous).—Length distended, exclusive of the antennae and setae, slightly more than 1.4 mm. Color various shades of yellow and brown. Brown: antennal segments IV to VIII; median anterior spot on abdominal segments III to VII and sometimes VIII; and all of tube except extreme base. Yellow brown to brown: head; antennal segment I and sometimes III lightly; thorax; and rest of abdomen. Yellow: antennal segments II and occasionally III and legs. Red: ocellar crescents, and some subintegumental pigments.

Head, fig. 3; post ocular seta moderately long, dilated at tips; maxillary bridge slightly widened and conspicuous.

Prothorax with all major setae well developed and dilated at tips; praepectus present; fore tarsi, each with a minute, apical tooth; fore wings reduced to a small pad; hind wings seemingly absent, not even represented by a pad.

Adominal tergum II smooth, without sculpture; wing retaining setae reduced, spinelike, not sigmoidal; anal setae slightly less than twice as long as tube length.

Male (brachypterous).—Length distended, exclusive of the antennae and setae, slightly more than 1.2 mm. General color and structure simi-

lar to female. Abdominal sternum VIII without glandular area; abdominal tergum IX with posterior, lateral setae shortened and spinelike.

Holotype.—Female; Santa Cruz Island, California; January 27, 1949; (F. Taylor); presumably from ground litter from which it was recovered by means of a Berlese funnel. *Allotype.*—Male; same data as for holotype. *Paratypes.*—2 ♀, 1 ♂; Hollywood, California; January 16, 1949; (C. Tellez); presumably from ground litter.

Additional records.—IDAHO: 1 ♀; Franklin; March 19, 1949; (G. F. Knowlton and Shih-Chun Ma); ex: leaves of poplar and grasses. UTAH: 1 ♂; Garland; July 23, 1949; (G. F. K. and S. E. M.); ex: moldy poplar leaves. NEW MEXICO: 1 ♀; so. of Hatch; November 29, 1949; (C. C. Hoff); ex: rotten cottonwood stump along Rio Grande. 9 ♀; Bernalillo Co.; October 29, 1950; (C. C. Hoff); Juniper litter. 16 ♀, 1 ♂; Pumice Mine, no. of Grants, Valencia Co.; October 20, 1951; (C. C. Hoff); pinyon litter—Berlese sample.

In 1952 Miss O'Neill showed me several more specimens of this species taken from a rat's nest collected in Santa Fe, New Mexico by Dr. H. B. Morlan. These specimens are kept in the collections of the United States National Museum.

This species is the western counterpart of the eastern *americanus*. The two may be easily distinguished from each other by color, especially the color of antennal segments II and III. Individuals of *sonorensis* have these segments yellowish, whereas individuals of *americanus* have the segments brown. Except for teneral specimens, *americanus* is a dark brown insect in contrast to *sonorensis* which is a yellowish brown insect.